

ART. VIII.—*Notes on the Trawling Expedition off
Lakes Entrance.*

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Trawling operations were commenced at the end of last April off Lakes Entrance, with a view to obtaining the Government bonus and establishing the industry. The boat obtained was the s.s. *Swansea*, of forty-one tons, twenty-two horse-power. The trawling apparatus consisted of two trawl-heads of iron, connected by a beam above and a ground-rope below, a net being attached to the beam and ground-rope, and ending in a bag with a flap to prevent fish escaping. The trawl-heads consisted of an iron bar, bent so as to form two straight pieces diverging at about thirty degrees, and connected by a curve at the front. At the sharp angle the ground-rope was attached. One of the straight pieces formed a sliding surface, and at the highest point the beam was attached, the tow-line was fixed a little above the middle of the curved part. The trawl-heads in use at first weighed about 180 pounds each, and the beam was about forty-nine feet long, and eight inches in diameter; the ground-rope being about double that length. The net had a mesh of about two inches for the greater part. When I reached Lakes Entrance on the evening of 1st May, they had been out once or twice and not caught much, and were putting in a lighter beam, about six inches in diameter. After this was done and the sea had become a little calmer, a start was made. The trawling apparatus was carried, when not in use, along the port side, and lowered and raised there, the tow-rope being brought round to the stern after it was lowered. The raising and lowering took about two hours, owing to there being only one winch on board, and the side of the boat being obstructed by railings and other things. It was stated on board by the men who were engaged as experts in trawling, that it should only have taken about twenty minutes with proper appliances and arrangements. The time the net was left down varied from four to eleven hours.

The steamer was not sufficiently powerful to tow the net at a proper speed, the speed attained at one time being only one mile an hour; while on one occasion it was found that the steamer could scarcely manage to turn with the net, an hour being spent in turning round.

The plan of operations was to fish near the entrance, running in early in the morning to send up the fish to Melbourne. The ground trawled over extended from about fourteen miles west of the Entrance to opposite Lake Tyers. The depth of water was about twelve to fifteen fathoms, once reaching twenty-five fathoms.

The fish caught were chiefly Flounders, Flathead, Gurnet, Sandcod, Skate, a few Sole, and a fish said to be well known in Sydney though not in the Melbourne market, for which they had no name. At first sight the latter were thought to be young Schnapper. Owing to the coarseness of the net many small things could escape, and as the net in the raising was for a long time almost at water level they had good opportunities of doing so. Starfishes, Crabs, and other animals could frequently be seen walking off as the net was brought up to the surface. After some days it was decided that the trawling apparatus was too heavy for the boat and must be considerably lightened. They therefore decided to cut ten feet off the beam, put on lighter heads of about forty pounds each, and alter the net accordingly. These alterations would take time, and as the weather had set in rough I decided to return on Monday, 8th May. When on shore I spent the time in searching for anything that might be thrown up, but the beach was very barren. Inland there also appeared to be very little to be found.

I have to express my thanks to the Royal Society for defraying my expenses on the expedition; and to Dr. Wollaston (the Secretary for Trades and Customs), Captain Anderson, Messrs. Hill and Son (the Melbourne agents for the owners, Messrs. Murray and Co. of Sydney), and Captain MacArthur of the *Swansea*, for their assistance in making the arrangements, and for granting me every facility in obtaining specimens.

Dr. Dendy says of the *Sponges* collected:—"There are about twenty species, including *Cavochalina bilamellata*, *Halisarca australiensis* (growing on *Boltenia*), and one calcareous sponge, *Leucilla saccharata*. The remainder appear to be nearly all

common forms, closely resembling if not identical with those of Port Phillip Heads."

Of the *Polyzoa* Dr. MacGillivray gives the following list:—*Cellaria gracilis*, *Beania magellanica*, *Membranipora pyrula*, *Steganoporella magnilabris*, *Adeona grisea*, var., *Adeonellopsis mucronata*, *Hipporhoa divaricata*, *Schizoporella triangula*, *Porella marsupium*, *Cellepora foliata*, *C. mammillata*, *C. albirostris*, *Smittia oculata*, *Retepora monilifera*, *Crisia acropora*, *Hornera foliacea*. He says "There is nothing new among them, but the specimens of *Cellepora foliata* and *Steganoporella magnilabris* are unusually good, as also is that of *Adeonellopsis mucronata*. There may be an additional species among the smaller *Celleporæ* but the genus, which is an exceedingly difficult one, is not yet completely worked out."

Other specimens were :

Hydrozoa.—One species.

Alcyonaria.—Two species.

Echinodermata.—Two species of Ophiuroids; one species of Crinoid (*Antedon*); two species of Echinoids (*Strongylocentrotus erythrogrammus* and another). All appear to be common forms.

Worms.—Several tubicolous Annelids, chiefly *Filograna*, and a number of worms living in the sponges.

Crustacea.—About eight species of Crabs, including large Hermit crabs, living in shells of *Voluta fusiformis* and *V. undulata*, and another species in a shell of *Cassis*, and also very large specimens of *Ibacus peronii*.

Mollusca.—On shore, thrown up, *Pectunculus flabellatus* and a few other species all much worn by the surf, including *Triton* sp. and *Potamides* sp. Inside the entrance on the mud banks a species of *Modiola*. Dredged from the bottom, *Pecten laticostatus* and another species of *Pecten*, *Modiola* sp., *Siphonalia* sp., *Voluta fusiformis*, *Crepidula* sp., and empty shells of *Voluta undulata*, *Crassatella kingizola*, *Pinna tasmanica*, *Ostræa* sp., and *Cassis* sp.

On the shore of Lake Bunga, I found a few empty shells of *Bulimus atomatus*.

Tunicata.—One compound Ascidian.